

CLAIMS FOR US APPLICATION (voluntary amendments)

1. A fine metal structure having its surface furnished with microprojections, characterized in that the thickness or equivalent diameter of the microprojections ranges from 10 nanometers to 10 micrometers, that the ratio of the equivalent diameter (D) to the height (H) of the microprojections, H/D, is greater than 1, and that the microprojections are made of an alloy containing a nonmetallic element as an accessory constituent.
2. The fine metal structure according to Claim 1 wherein the nonmetallic element is boron.
3. The fine metal structure according to Claim 1 wherein at least part of the surface of each microprojection is coated with at least one layer of coating.
4. The fine metal structure according to Claim 1 wherein at least one type of organic material selected from the group consisting of antigens, antibodies, proteins, bases, sugar chains and surface modifiers is fixed directly or indirectly to the surface of each microprojection.
5. A fine metal structure having its surface furnished with microprojections, characterized in that at least part of the surface of each microprojection is coated with at least one layer of coating having a different composition from that of the microprojections.

6. The fine metal structure according to Claim 5, said structure having a portion where the thickness or equivalent diameter of the microprojections is from 10 nanometers to 10 micrometers.
7. The fine metal structure according to Claim 5 wherein the ratio of the equivalent diameter (D) of microprojections to their height (H), H/D, is greater than 1.
8. The fine metal structure according to Claim 5 wherein the microprojections are made of an alloy containing a nonmetallic element as an accessory constituent.
9. The fine metal structure according to Claim 5 wherein at least one organic material selected from the group consisting of antigens, antibodies, proteins, bases, sugar chains and surface modifiers is fixed to the surface of the coating layer.
10. The fine metal structure according to Claim 5 wherein the material composing the coating layer is gold.
11. A process for producing a fine metal structure, which comprises providing a substrate having a fine rugged pattern on its surface, applying a molecular electroless plating catalyst to the substrate surface, thereafter carrying out electroless plating to thereby form a metal layer having the rugged pattern filled, and detaching the metal layer from the substrate to thereby obtain a fine metal structure

furnished with a surface having undergone reversal transfer of the rugged pattern.

12. A process for producing a fine metal structure characterized in that after producing a fine metal structure according to the method of Claim 11, at least one coating layer composed of a different composition from that of said fine metal structure is formed on the surface of said fine metal structure.

13. A process for producing a fine metal structure characterized in that after producing a fine metal structure according to the process of Claim 11, at least one organic material selected from the group consisting of antigens, antibodies, proteins, bases, sugar chains and surface modifiers is fixed at least at a part of said gold coating surface.

14. The process according to Claim 11 wherein the rugged surface configuration of said fine structure is at least partly constituted by columnar microprojections, with the diameter or the length of one side thereof being 10 nanometers to 10 micrometers, and the ratio of their diameter or length of one side (D) to their height (H), H/D, is greater than 1.

15. A metal mold used for pressure molding of resins and inorganic materials, characterized in that the surface of the mold is constituted by the fine metal structure set forth in Claim 1.

16. A nanoimprinter in which resins or inorganic materials are pressure molded by using a fine metal

mold, characterized in that the surface of said fine metal mold is constituted by the fine metal structure set forth in Claim 1.

17. An electrode for converting, producing or detecting the materials by an electrochemical reaction, characterized in that at least part of the surface of the electrode is constituted by the fine metal structure set forth in Claim 1.

18. A microchip having a fine rugged configuration at the specimen detecting section, characterized in that the fine metal structure set forth in Claim 1 is used for the detecting section.

19. A microchip in which a material interacting with the specimen is fixed to the surface of a substrate, characterized in that the fine metal structure set forth in Claim 1 is used as said substrate.

20. A DNA chip having multiple types of DNA fixed to the substrate surface, characterized in that the fine metal structure set forth in Claim 1 is used as the substrate.